SCIENTIFIC SERIAL.

Bulletin of the American Mathematical Society, November.—Dr. G. A. Miller gives a short account of the meeting of the American Association for the Advancement of Science (held August 21–26) as it bore upon the Society, with a short abstract of some of the mathematical papers. A hope is expressed that the Society and the Society for the Promotion of Engineering Education may meet next year with sections A and D respectively of the Association.—Prof. Oskar Bolza reviews Harkness and Morley's introduction to the theory of analytical functions, and Prof. A. S. Hathaway discharges a like office for MacAulay's Octonions. Prof. Bolza considers the former work to be not only of high scientific and pedagogical value, but at the same time of a singular beauty and elegance. A certain freshness and originality pervade the whole, even in places where the authors follow along beaten tracks, and give at every turn evidence of the complete mastery of the subject with which the book is written.—Dr. Lovett gives a *résumé* of five recent theses in mathematics presented for the doctor's degree at the University of Paris. They are: Sur quelques points de la théorie des fonctions, by M. L. Desaint; Sur une classe particulière de groupes hyperabéliens, by M. H. Bourget; Sur l'integration des équations de la chaleur, by M. E. LeRoy; Les équations différentielles linéaires de la théorie des groupes, by M. F. Marotte; and Essai sur une théorie générale de l'intégration et sur la classification des transcendantes, by M. J. Drach. In the copious mathematical "Notes," an account is given of the mathematical courses of lectures in the winter semester of several Continental and other universities.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 16.—"The Medusæ of Millepora." By Sydney J. Hickson, F.R.S.

The male medusæ were discovered in specimens of Millepora from Torres Straits in 1891. Since then no medusæ were seen in any specimens examined except in some from Funafuti collected by Mr. Gardiner, but these were also males and resembled in all essential respects the medusæ previously described. Last year Mr. Duerden sent to the author two consignments of preserved Millepora, one bearing immature and the other mature female medusæ. The immature female medusæ were about 0·4 mm. in diameter; the umbrella is a thin membrane slightly swollen at the margin containing no canals nor cavities of any kind. There is no velum and no tentacles. The umbrella cavity is almost entirely filled with a swollen manubrium bearing a centrally placed mouth and a broad band of ova. The mature female medusæ are 0·6 mm in diameter; three or four ova attain to a size of 0·2 mm. in diameter, the others undergo degeneration or become absorbed into the substance of the large ova. The endoderm of the manubrium is still very thick and vacuolated, but the mouth is usually closed. After the discharge of the medusæ from the corallum the ova become more vacuolated and increase in size to 0·25 mm. in diameter, the general appearance of the eggs being similar to that of the floating eggs of other Cœlenterates.

The medusæ were observed in the living state by Mr. Duerden, who describes them as being sluggish in their movements, feebly pulsating only now and again. Soon after they are set free the eggs are discharged one by one. The whole process, liberation of the medusæ and extrusion of the ova was completed in five or six hours.

Royal Society, December 14.—"The Piscian Stars." By Sir Norman Lockyer, K.C.B., F.R.S.

The classification of the Piscian stars (those in the spectra of which there are dark flutings of carbon) was arrived at nearly ten years ago from the observations of Dunér. The investigation indicated that these stars could be grouped into several distinct species, in the same way as those of Group II. (Antarian stars) which the author had already classified (*Roy. Soc. Proc.*, vol. xliv. p. 65, 1888).

Owing to the want of definite information regarding the line spectrum, the publication of the classification was postponed. Facts bearing on the line spectrum have now been furnished by the recent photographic work of McClean and Hale, and as these do not disturb the classification at which the author had previously arrived, it is unnecessary to further delay the publication of the memoir, which in the main stands as it was written. The original paper is supplemented by reference to the more recent work. The general conclusions arrived at are as follows:—

(1) The undoubted presence of carbon flutings in the sun, including that near *b*, and of solar lines in the Piscian stars, indicates that the Piscian stars are next in order of development to the Arcturian stars.

(2) The stars observed by Dunér may be divided into seven species, beginning with the hottest and ending with the coolest stars.

(3) The reported presence of bright lines in the Piscian stars must be received with caution, as similar evidence of bright lines might be adduced in the case of other classes of stars in which the spectrum is fully explained by dark lines alone.

(4) The redness of the stars increases as we pass from the earlier to the later species of the group.

(5) The variability in this group is less marked than in the Antarian stars, and may perhaps be accounted for by the revolution of secondary bodies of the nature of comets round the stars themselves.

(6) The place on the temperature curve assigned to these stars on the meteoritic hypothesis is fully confirmed by the more detailed inquiry, and the hypothesis is thereby strengthened.

Linnean Society, December 7.—Dr. A. Günther, F.R.S., President, in the chair.—Dr. Otto Stapf, exhibited specimens of Malayan and African species of *Kickxia*, Blume, to show the differences which exist between the two forms. These differences were noticeable in the shape and size of the corolla, the insertion and general relation of the stamens to the tube of the corolla, the placentation, the structure of the fruit, and the general habit of the plants. As the name *Kickxia* would have to be retained for the Malayan species, he proposed the name *Funtumia* for the African species, from *Funtum*, a vernacular name for *F. elastica*. He further pointed out, by means of flowering and fruiting specimens of *F. africana*, Stapf (*Kickxia africana*, Benth.), and of *F. elastica* (*Kickxia elastica*, Preuss), that the latter, and not the former (as was originally assumed), was the source of the so-called Lagos rubber, thus confirming the conclusion to which Dr. Preuss had come with regard to the origin of this rubber.—Dr. Stapf also showed, on behalf of the Director of Kew Gardens, a large infrutescence of *Musa Ensete*, Gmel., lately received from the Azores.—Mr. Gilbert Christy exhibited a preparation of india-rubber by a new process from *Castilloa elastica*, and also specimens of rubber obtained from *Kickxia elastica*.—Mr. A. D. Ferguson exhibited a series of photographic views taken in Demerara.—Mr. J. W. Fawcett read a paper on some vegetable poisons used for the capture of fish by the Aborigines of Australia.—Mr. B. Daydon Jackson pointed out how widespread was the practice of obtaining fish in this way, and gave a brief review of the literature bearing on the subject.—A paper was read by Mr. G. M. Thomson on some Schizopod Crustacea from New Zealand, in which a new genus (*Tenagomysis*) and some new species were described.—Mr. O. A. Walker, in criticising the paper, made some remarks on general distribution, and, in view of the paucity of material which existed, deprecated any attempt being made at present to draw general conclusions.—Mr. H. M. Bernard read a paper on the structure of *Porites*, the smallest of the stony corals.—In a former paper (*Linn. Soc. Journ.*, *Zool.* vol. xxvii. p. 127) he had endeavoured to show that the genus could be deduced from Madreporids as fixed young forms, so young that the skeleton was immature. The small size of the animals, and the fine reticular texture of the skeletal mass, may both be adaptions to their surroundings, for they are most frequently found at the outer edges of the reef and have to bear the full force of the breakers. Since reading his previous paper the author had been fortunate enough to discover the directive plane and the bilateral symmetry of the calicles in *Porites*—very difficult to see, but when once seen recognisable in nearly every specimen. By means of diagrams the variations of the septal system within the genus were described, and the pali were shown to appear in a regular system dependent upon the the fusions of the septa, which fusions always occurred in a definite order.

Mathematical Society, December 14.—Prof. Elliott, F.R.S., Vice-President, in the chair, and subsequently Dr. Macaulay and Dr. Larmor, F.R.S.—The following papers were communicated, in part, by their authors, viz.: (1) A method for extending the accuracy of mathematical formulæ; (2) Central difference formulæ, by Mr. W. F. Sheppard; Circular cubics, by Mr. Basset, F.R.S.; the theorem of residuation, being a general treatment of the intersections of plane curves at multiple points, by Dr. Macaulay.—The remaining papers were communicated by their titles, viz.: The genesis of the double Gamma functions, Mr. E. W. Barnes; on the expression of spherical harmonics as fractional differential co-efficients, Mr. J. Rose-Innes; and sums of greatest integers, by Mr. G. B. Mathews, F.R.S.

Royal Meteorological Society, December 20.—Mr. F. C. Bayard, President, in the chair.—Mr. Baldwin Latham read a paper on the climatic conditions necessary for the propagation and spread of plague. The bubonic plague is primarily due to a specific organism or microbe of infinitesimal size—so small that probably 250 millions of them would be required to cover a square inch of surface. Plague is infectious and contagious, and is greatly influenced by pestilential emanations from polluted and waterlogged soils. The author gives accounts of various outbreaks of plague in this and other countries, including the great plague of London in 1665, when 7165 deaths were recorded in one week in September. Plague is undoubtedly a disease of the poor, and attacks most readily those living on a low diet. The conditions which are conducive to the spread of plague are identical with those which give rise to the escape of malaria from the ground. That the ground itself exercises an enormous influence upon plague is shown by the fact that in all the epidemics persons living on the ground floors suffer to a much greater extent than those who live in the higher storeys of the houses. Mr. Latham says that there cannot be a doubt that the conditions which ordinarily produce evaporation from water or land surfaces are identical with those which produce exhalations from the ground; and these exhalations consist largely of vapour of water carrying matters injurious to health with them. Mr. Latham has discussed the meteorological observations (including the temperature of the soil at the depth of 9, 20, 60 and 132 inches), made at the Colaba Observatory, Bombay, and has compared them with the number of deaths from plague during the recent epidemics in Bombay. He says that if the temperature of the air increases beyond the temperature of the ground, so that its dew-point is above the temperature of the ground, condensation takes place instead of evaporation. To this increased high temperature may be due the sudden stoppage of plague after a certain high temperature has been reached, which, by raising the temperature of the dew-point, stops all exhalation from the ground and may cause condensation to take place instead of evaporation. So also a sudden fall of temperature causes plague to arise; for a fall of temperature means that the temperature of the dew-point must fall, and the tensional difference between a low dew-point and a high ground temperature would at once lead to exhalations escaping in large quantities from the ground, and so lead to the liberation of the plague bacillus from the ground, accompanied with the exhalations necessary for its development.—Dr. R. H. Scott, F.R.S., communicated a note on a remarkable dust haze which was experienced at Teneriffe, Canary Islands, on February 16 to 19, 1898. The haze during this period was exceptionally dense, so much so that a steamer was two days and three nights on a voyage from Teneriffe to Las Palmas, a distance she usually covered in five hours; while the *Tintagel Castle*, of the Donald Currie line, was delayed for thirty hours, and the *Roslin Castle*, homeward bound, had the dust so thick that for 900 miles the sun and stars were obscured, and the ship was delayed two days.

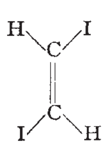
Zoological Society, December 19.—Dr. Henry Woodward, F.R.S., Vice-President, in the chair.—The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of November 1899, and called special attention to two snake-fishes (*Polypterus senegalus*) from the River Gambia, obtained by Mr. J. S. Budgett, F.Z.S., during his recent expedition to the Gambia, and presented by him on November 22. These were believed to be the first examples of this fish ever brought alive to Europe.—On behalf of Mr. G. S. Mackenzie, a photograph was exhibited of two remarkably large tusks of the African Elephant. They each measured, on the outside curve, 10 feet 4 inches in length, and weighed respectively 235 lbs. and 225 lbs.—Mr. Sclater exhibited, on behalf of Mr. Alfred Sharpe, C.B., a portion of the skin of a giraffe which had been shot on the east bank of the Great Loangwa River, British Central Africa, in latitude 13° south, and which, according to Mr. de Winton, who had examined it, was undoubtedly referable to the southern form of this mammal.—Mr. Sclater also exhibited photographs of two young male musk-oxen (*Ovibos moschatus*), now living in the Duke of Bedford's park at Woburn. The animals were stated to have been obtained in Eastern Greenland. They were believed to be the first examples of this species that had reached Europe alive.—Mr. W. E. de Winton exhibited and made remarks upon a specimen of a new mouse of the genus *Dendromys*, obtained by Lord Lovat at Managasha in Southern Abyssinia, for which he proposed the name *Dendromys lovati*.—Mr. R. E. Holding exhibited a series of the horns of the Siberian roebuck (*Capreolus pygargus*) from the Obb River, and made remarks upon the characteristic variation in the horns of this species. Mr. Holding also exhibited a pair of the horns of a stag, from the same district, probably *Cervus eustephanus*, in which the third tine was absent in both horns.—Dr. Forsyth Major exhibited the fœtal skulls of various Malagasy lemurs, showing the development of the osseous tympanic bulla, in which the tympanic ring did not participate. The tertiary *Adapis* in this and other features closely approached the Malagasy lemurs.—He also exhibited an almost complete skull of a new species of *Nesopithecus* (*Globilemur*).—Mr. W. L. Sclater made some remarks on a forthcoming series of volumes which he proposed to issue under the title of "The Fauna of South Africa." The first volume, which was now nearly ready, and would deal with the first half of the Passerine birds, had been undertaken by the late Dr. A. C. Stark. The volume on the mammals, by Mr. Sclater himself, was now in the printer's hands, and would also shortly be issued.—Mr. W. P. Pycraft read the fourth part of his "Contributions to the osteology of birds," which dealt with the grebes and divers (*Pygopodes*). The author considered that the grebes and divers were closely related *inter se*, that they could not be associated with the auks, as had been done by some ornithologists, but were more nearly allied to the tubinares, impennes, and steganopodes. The author also stated that he was of opinion that *Hesperornis* undoubtedly belonged to the suborder pygopodes.—Mr. F. G. Parsons read a second portion of a paper "On the myology of the edentata," prepared by Prof. B. C. A. Windle, F.R.S., and himself. It dealt with the muscles of the hind limb, and also contained a summary of the conclusions that the authors had arrived at respecting the musculature of the order.

CAMBRIDGE.

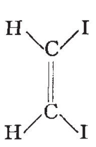
Philosophical Society, November 27.—Mr. Larmor, President, in the chair.—On the influence of temperature, and of various solvents, on the absorption spectra of Didymium and Erbium salts, by Prof. Liveing. Prof. Liveing exhibited a number of photographs prepared to illustrate his paper on the absorption spectra of solutions of salts of Didymium and Erbium in various conditions of dilution and temperature, and in various solvents, which was communicated to the Society at the Stokes Jubilee meeting. These photographs showed that dilution produced no increase of the intensity of the absorptions when the thickness of the absorbent was proportioned to the dilution. In strong solutions of the chlorides a diffuse continuous absorption creeps down the spectrum from the most refrangible end and extends further as the solution is more concentrated. This is not seen with most chlorides, not even with that of aluminium, but is shown by strong solutions of hydrochloric acid in water and in alcohol. The nitrates show a somewhat similar general absorption, and also a widening of some of the bands as the solutions become more concentrated. The effect of acidifying the solutions is to make the absorptions generally more diffuse, but not sensibly to weaken them, and to extend the general absorptions at the most refrangible end. A rise of temperature from about 20° C. to 97° or 98°, also makes the bands more diffuse, but does not increase their intensity. It seems to the author improbable that the metallic atoms should maintain such independence in combination as to have the same absorptions in such different compounds as chloride, nitrate and sulphate, and it is more probable that the common absorptions are due to common products of decomposition. These might be the metallic ions, but the facts that neither dilution nor rise of temperature increase the intensity, and that acidifying does not weaken the intensity of the common absorptions are against that supposition. Ionization implies an electrification of the ions, which again implies a communication of energy to the field, which may probably depend on the circumstances of the encounter when the molecule of salt is broken up, and so some molecules may be broken up without being charged; while there is no reason to suppose that the absorption by a molecule would be altered by its being charged with electricity. The absorptions which are intensified by concentration and also by heat must be ascribed to the condition of the molecules during encounters, which will be more frequent in more concentrated as well as in hotter solutions. The expansion of certain bands with increased concentration by the nitrate, must be ascribed to encounters of molecules derived from the metal with those derived from the acid, which are much more massive than the molecules of water and also than those derived from the chloride. During such encounters the absorbent molecules will be as it were loaded by the influence of the other molecules. This view seems confirmed by the influence which other solvents and other acids have on the absorptions. Didymium chloride in alcohol gives the same bands as the aqueous solution, but generally more diffuse and more or less shifted a little towards the red. The same solution acidified with hydrochloric acid exaggerates greatly these modifications, almost washing out the more refrangible bands and breaking up the very strong band in the yellow into several separate bands. Glycerol as solvent gives modifications similar to, but more strongly marked than, those of alcohol. The acetate in acetic acid and the maleate in water gives similar but much less marked modifications. The tartrate and the citrate in ammoniacal solution also give similar modifications. The borate in solid glass of borax also gives bands which are unmistakably modifications of those produced by the aqueous solution. All these modifications seem to be of the same *character*, though of greater intensity, than the differences between the bands given by nitrate and chloride, and may be attributed to the influence of the comparatively complicated influences of the various molecules during the times of encounter. In such cases as the acid alcoholic solutions there will certainly be at least four chemical compounds mixed in the solvent, which may well produce a complicated modification of the bands without destroying their identity.—"Researches in the Sugar Group," by H. Jackson. A summary is given of the joint researches of Mr. H. J. H. Fenton and the author, which may be conveniently divided into two parts. (*α*) Oxidation of the more common polyhydric alcohols. The remarkable part which iron plays as a carrier of oxygen was first pointed out by Mr. Fenton in the case of tartaric acid, and has since been extended by him to other hydroxy-compounds. An aqueous solution of the following polyhydric alcohols, glycol, glycerine, erythrite, dulcite, mannite and sorbite, was taken in turn, and after adding a small quantity of ferrous salt to each, hydrogen peroxide was added: in all cases a large evolution of heat took place. The oxidation products in the case of glycol, glycerine and erythrite quickly reduce Fehling's solution in the cold and restore the colour to an alcoholic solution of magenta, which has been decolourised by sulphur dioxide: on treatment with phenyl hydrazine acetate, osazones were obtained which, on analysis, were found to correspond respectively to glycolic aldehyde or diose, glycericaldehyde or triose, and erythrose or tetrose. The oxidation compounds of dulcite, mannite and sorbite do not reduce Fehling's solution in cold, but quickly on warming: they do not give the "magenta" test; facts which serve to distinguish the hexoses from the simpler members of the sugar group. On treatment with phenyl hydrazine acetate there was obtained from dulcite the osazone of inactive galactose, from mannite the hydrazone of mannose, and from sorbite an osazone identical with glucosazone. If an aqueous solution of glycol, glycerine or erythrite, to which a very small quantity of ferrous salt has been added, be exposed for a little time to the action of sunlight in the presence of atmospheric oxygen, it can be shown on examination that a certain amount of the sugar has been formed. These experiments may perhaps give a little support to the theory that iron, which occurs in hæmoglobin and is associated so intimately with chlorophyll, may act as a carrier of atmospheric oxygen. (*β*) Isolation of diose in a crystalline state and its condensation to a hexose. When dioxymaleic acid, suspended in water, is distilled on the water bath under very diminished pressure and the distillate evaporated to small bulk in a vacuum desiccator, a syrup is left which on standing crystallises out in flat plates of the oblique system. On analysis and examination it is shown to be crystalline diose. A determination of its molecular weight by the depression of the freezing point of water shows the crystal to be bimolecular, but on standing and taking frequent determinations the molecular weight gradually becomes normal and corresponds to the single formula $C_2H_4O_2$, and then remains quite constant. If a dilute aqueous solution of diose be treated with a 1 per cent. solution of soda at the ordinary temperature it quickly turns yellow and finally brown. After standing a few hours it no longer reduces Fehling's solution in the cold, but readily on warming: it no longer gives the "magenta" test: in fact, it has lost all the properties of diose and assumed those of a true hexose. This is confirmed on examining the osazone, which corresponds to a normal hexosazone. The melting point and action towards solvents of the osazone prove its identity with *β* acrosazone, which Fischer and Tafel isolated from the condensation product of glycerose.—On a new mineral by A. Hutchinson. A colourless transparent crystal of the new mineral was found on a specimen of Axinite from Cornwall in the Carne collection recently acquired by the University. The crystallographic and optical constants of the crystal prove it to belong to the Prismatic system. The results of a quantitative chemical analysis agree well with the formula $CaSn(SiO_3)_3.2H_2O$. The mineral has been named Stokesite in honour of Sir George Gabriel Stokes.—On the condition that five lines in space of four dimensions should lie on a quadric, by H. W. Richmond. In order that five straight lines situated in a space of four dimensions should lie on a surface of the second order a condition must be satisfied. It is here pointed out that the known properties of quadrics in space of five dimensions suggest a simple mode of expressing the necessary condition.

St. Louis.

Academy of Science, December 4.—Dr. Edward H. Keiser described some derivatives of acetylene, exhibiting specimens of the new liquid acetylene iodide discovered by him in January, 1899. He described the methods of making the compounds, and gave an account of its chief physical and chemical properties. The liquid acetylene di-iodide solidifies at $-21°$ C. and boils at 185°. It has the percentage composition and molecular weight represented by the formula $C_2H_2I_2$, and is isomeric with the well-known solid acetylene di-iodide. The speaker announced the discovery of a new method of making the liquid acetylene di-iodide, namely, by heating the solid compound to 260° in a sealed tube. The solid compound is thereby partially converted into the liquid compound. Similarly, if the pure liquid di-iodide be heated to 260° in a sealed tube, on cooling down the liquid will be found to have been partially converted into the solid compound. All the facts known indicate that these two iodides of acetylene are stereoisomers, and that their configuration must be represented by the stereometric formulas



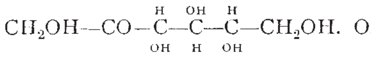
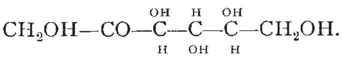
and



Since Dr. Keiser has found that the solid acetylene di-iodide can be converted into fumaric acid, it would follow that the first of the two formulas would represent the solid acetylene di-iodide and the second one the liquid di-iodide. Further experiments upon these compounds are under way, and the attempt will be made to convert the liquid di-iodide into maleic acid.—Dr. K. Bremer demonstrated some tests for glucose by means of aniline dyes, showing that nearly all of the "alkaline" aniline dyes, when rendered basic by the addition of sodium hydrate, become decolourised, or have their colour greatly modified, on heating, in case glucose is present. The reactions shown were especially pretty in the case of methylene blue and safranine.—Prof. Nipher announced that he had nearly completed preparations for the measurement of wind pressures on the sides of the main building of Washington University. The pressures are to be measured at various points along the west end of the building, having a width of about 50 feet, and along the north front, which is something over 200 feet in length. Simultaneous measurements of wind pressure, and wind velocity and direction will be made. The method used is that tested by him on the trains of the Illinois Central Railroad during the summer of

1897. The method was described in No. 1, vol. viii. of the *Transactions* of the Academy of Science of St. Louis. An invitation was extended to members to visit the University and inspect the apparatus.—Prof. H. Aug. Hunicke spoke briefly on some observations which he had recently made on the boiling temperature of hydrocarbons, from which it appeared that when T is the boiling temperature (absolute scale), ρ is radius of gyration of the molecule, and α is a constant, then $T^2 = \alpha\rho$. This holds for the entire series of saturated hydrocarbons, including all isomers.

AMSTERDAM.

Royal Academy of Sciences, November 25.—Prof. Van de Sande Bakhuyzen in the chair.—Prof. Kamerlingh Onnes read, on behalf of Prof. Lorentz and himself, a report on the treatise by Prof. R. Sissingh, entitled "The general properties of the optical image by central rays in a series of centred spherical surfaces." The conclusion, arrived at in the report, viz., to insert the treatise in the *Transactions* of the Academy, was approved. Dr. Hamburger made a communication concerning the absorption of fat and soap in the large and the small intestine. (1) It may now be considered as settled that the large intestine of the dog possesses the power of absorbing fat. (2) Contrary to what has hitherto been assumed, this power is considerable and not even inferior to that of the small intestine. (3) To bring about such a considerable absorption, it is necessary to take an emulsion which will keep a long time in the intestine. The usual Na_2CO_3 is not suitable for preparing such an emulsion, much less NaCl, because both are absorbed quickly and the emulsion consequently soon ceases to exist. A solution of sapo medicatus, however, appears to answer the requirements. (4) As regards the soap solution itself, it appears that it is absorbed, though much more slowly than Na_2CO_3, and that during the absorption it is, partly at least, converted into fat already in the mucosa. This conversion goes on in the severed intestine, nay, it is even effected when the mucosa has been chopped up. Heating to 80°, however, destroys the above mentioned property. (5) As regards the course, taken by fat during absorption in the large intestine, it is very likely that part of it is carried off by the blood capillaries. At any rate in the case of the small intestine, this has been proved beyond a doubt by the above described experiments.—Prof. Cardinaal made a communication concerning an application of the involutions of a higher degree.—Prof. W. Kapteyn made a communication on certain particular cases of Monge's differential equation. All these communications will be inserted in the *Proceedings*. The following were further presented for insertion in the *Proceedings*. (*a*) By Prof. Bakhuis Roozeboom, two papers, by Dr. Ernst Cohen, entitled respectively: (1) The enantiotropy of tin (III.), and (2) The alleged identity of red and yellow mercuric oxide. (*b*) By Prof. Lobry de Bruyn: (1) On behalf of Mr. W. Alberda van Ekenstein and himself, a paper on *d*-sorbinose and *l*-sorbinose (ϕ-tagatose) and their configuration. The inquiry into *d*-sorbose has shown that this ketose possesses the following configuration formula:  $\mathrm{CH_2OH{-}CO{-}}\underset{\mathrm{OH}}{\overset{\mathrm{H}}{\mathrm{C}}}{-}\underset{\mathrm{H}}{\overset{\mathrm{OH}}{\mathrm{C}}}{-}\underset{\mathrm{OH}}{\overset{\mathrm{H}}{\mathrm{C}}}\mathrm{{-}CH_2OH}$. On reduction it yields, besides *d*-sorbite, *d*-idite as well; its osazon is identical with idosazon and gulosazon. ϕ-tagatose, a new ketone, which, besides tagatose, is obtained from galactose, under the transforming influence of alkalis, has been found to be the optical antipode of *d*-sorbose, consequently *l*-sorbose with the configuration  $\mathrm{CH_2OH{-}CO{-}}\underset{\mathrm{H}}{\overset{\mathrm{OH}}{\mathrm{C}}}{-}\underset{\mathrm{OH}}{\overset{\mathrm{H}}{\mathrm{C}}}{-}\underset{\mathrm{H}}{\overset{\mathrm{OH}}{\mathrm{C}}}\mathrm{{-}CH_2OH}$. A detailed article on this subject will appear in the *Recueil*. (2) On behalf of Mr. J. J. Blanksma, a paper on the action of sodium mono- and disulphides on aromatic nitro compounds. The inquiry has proved that a nitro group of *o*-dinitrobenzol is easily replaceable, and that dithio combinations are formed (also obtained from chlorine nitrobenzol and bromine nitrobenzol), which on oxidation yield sulphonic acids. (*c*) By Prof. J. C. Kapteyn, on behalf of Mr. S. L. Veenstra, a paper on the results of his inquiries into systematical corrections of the stars' own motions in Auwer's Catalogue of Bradley and the coordinates of the apex of the sun's motion. The computations are founded on data, derived from a still unpublished catalogue, compiled by Prof. Kapteyn, which contains, besides the motions of the Bradley stars, a number of auxiliary magnitudes. The result of the computation of the apex does not point to a relative motion of stars of different spectral types. (*d*) By Dr. J. P. van der Stok, a paper on two earthquakes, observed respectively at Batavia and in Europe. (*e*) By Prof. Van der Waals, on behalf of Dr. G. Bakker, a paper on the potential functions $\phi(r) = \frac{Ae^{\ qr} + Be^{qr}}{r}$ and $\phi(r) = \frac{A \sin(qr + \alpha)}{r}$, and Van der Waals' potential formula.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 28.

ROYAL INSTITUTION, at 3.—Fluids in Motion and at Rest: C. V. Boys, F.R.S.

SATURDAY, DECEMBER 30.

ROYAL INSTITUTION, at 3.—Fluids in Motion and at Rest: C. V. Boys, F.R.S.

MONDAY, JANUARY 1.

VICTORIA INSTITUTE, at 4.30.—Sub-Oceanic Terraces and River Valleys: Prof. Lobley.

TUESDAY, JANUARY 2.

ROYAL INSTITUTION, at 3.—Fluids in Motion and at Rest: C. V. Boys, F.R.S.

THURSDAY, JANUARY 4.

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